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CLC-KA siRNA (m): sc-142368

BACKGROUND

The family of voltage-dependent chloride channels (CLCs) regulate cellular trafficking of chloride ions, a critical component of all living cells. CLCs regulate excitability in muscle and nerve cells, aid in organic solute transport, and maintain cellular volume. CLC-KA is a kidney-specific chloride channel that mediates transepithelial chloride transport in the thin ascending limb of the Henle loop in the inner medulla. CLC-KA plays a crucial role in urine concentration. The gene encoding human CLC-KA maps to chromosome 1p36. Mutations in this gene may be associated with nephrogenic diabetes insipidus in those cases where mutations in the Vasopressin V2 receptor and the AQP2 water channel are lacking. CLC-KB mediates basolateral chloride ion efflux in the thick ascending limb and in more distal nephron segments. The gene encoding human CLC-KB maps to chromosome 1p36. Mutations in this gene cause type III Bartter's syndrome which is characterized by renal salt-wasting and low blood pressure.

REFERENCES

1. Saito-Ohara, F., et al. 1996. Assignment of the genes encoding the human chloride channels, CLCNKA and CLCNKB, to 1p36 and of CLCN3 to 4q32-q33 by *in situ* hybridization. *Genomics* 36: 372-374.
2. Simon, D.B., et al. 1997. Mutations in the chloride channel gene, CLCNKB, cause Bartter's syndrome type III. *Nat. Genet.* 17: 171-178.
3. Matsumura, Y., et al. 1999. Overt nephrogenic diabetes insipidus in mice lacking the CLC-K1 chloride channel. *Nat. Genet.* 21: 95-98.
4. Gyomai, K., et al. 2000. Expression of the chloride channel CLC-2 in the murine small intestine epithelium. *Am. J. Physiol., Cell Physiol.* 279: 1787-1794.
5. Estevez, R., et al. 2001. Barttin is a Cl⁻ channel β -subunit crucial for renal Cl⁻ reabsorption and inner ear K⁺ secretion. *Nature* 414: 558-561.

CHROMOSOMAL LOCATION

Genetic locus: Clcnka (mouse) mapping to 4 E1.

PRODUCT

CLC-KA siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CLC-KA shRNA Plasmid (m): sc-142368-SH and CLC-KA shRNA (m) Lentiviral Particles: sc-142368-V as alternate gene silencing products.

For independent verification of CLC-KA (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-142368A, sc-142368B and sc-142368C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNases and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

CLC-KA siRNA (m) is recommended for the inhibition of CLC-KA expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 μ M in 66 μ l. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CLC-KA gene expression knockdown using RT-PCR Primer: CLC-KA (m)-PR: sc-142368-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.